Amendments to the Claims

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (Currently Amended) An apparatus for correcting offset, comprising:

offset adjustment means for adding an offset adjustment amount to an input signal;

Viterbi decoding means for subjecting the input signal to Viterbi decoding for binarization after offset adjustment is performed by said offset adjustment means; and

calculating means, being connected to said offset adjustment means and said Viterbi decoding means, for calculating an offset adjustment amount so that a value, that is obtained by dividing a standard deviation of path metric difference between a survivor path in said Viterbi decoding means and another path merged into said survivor path ~~in said Viterbi decoding means~~ by an average of said path metric difference, is minimized. ~~is minimized.~~

2. (Currently Amended) The apparatus for correcting offset according to claim 1, wherein

said calculating means includes means for calculating an offset adjustment amount by ~~subtracting,~~ subtracting a calculated value from a current offset adjustment amount, ~~a value~~ the current value being obtained by multiplying ~~by~~ a prescribed coefficient with an instantaneous differential value of ~~a~~ the value obtained by dividing the standard deviation of path metric difference between said survivor path and said another path by the average of said path metric difference.

3. (Original) The apparatus for correcting offset according to claim 1, wherein

a recording code of an original bit column of said input signal has a minimum inversion interval of at least 2, a ratio of impulse response of an isolated mark assumed by said Viterbi decoding means is set to (1:2:1), and an expected value of said Viterbi decoding means is set to $-\alpha$, -0.5α, $+0.5\alpha$, $+\alpha$ assuming α as a prescribed constant, and

when current input data, input data preceding by 1 sample, and input data preceding by 2 samples are denoted by y_i, y_{i-1}, y_{i-2} respectively, the path metric difference between said survivor path and said another path is calculated by $\pm\alpha(y_{i-2} + 2y_{i-1} + y_i)$.

4. (Original) The apparatus for correcting offset according to claim 2, wherein

a recording code of an original bit column of said input signal has a minimum inversion interval of at least 2, a ratio of impulse response of an isolated mark assumed by said Viterbi decoding means is set to (1:2:1), and an expected value of said Viterbi decoding means is set to $-\alpha$, -0.5α, $+0.5\alpha$, $+\alpha$ assuming α as a prescribed constant, and

when current input data, input data preceding by 1 sample, and input data preceding by 2 samples are denoted by y_i, y_{i-1}, y_{i-2} respectively, the path metric difference between said survivor path and said another path is calculated by $\pm\alpha(y_{i-2} + 2y_{i-1} + y_i)$.

5. (Original) The apparatus for correcting offset according to claim 1, wherein

said calculating means includes means for calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

6. (Original) The apparatus for correcting offset according to claim 2, wherein

said calculating means includes means for calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

7. (Original) The apparatus for correcting offset according to claim 3, wherein

said calculating means includes means for calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

8. (Original) The apparatus for correcting offset according to claim 4, wherein

said calculating means includes means for calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

9. (Original) The apparatus for correcting offset according to claim 1, wherein

said calculating means includes means for calculating said offset adjustment amount so as to satisfy $x = -(A + 3B + 3C + D)/8$, where an adjustment amount, an input signal corresponding to Viterbi decoding expected value $-\alpha$ after passing through a high frequency cutoff filter, an input signal corresponding to -0.5α after passing through a high frequency cutoff filter, an input signal corresponding to $+0.5\alpha$ after passing through a high frequency cutoff filter, and an input signal corresponding to $+\alpha$ after passing through a high frequency cutoff filter are denoted by x, A, B, C, and D respectively.

10. (Original) The apparatus for correcting offset according to claim 3, further comprising a low frequency cutoff filter connected to a preceding stage of said offset adjustment

means.

11. (Original) The apparatus for correcting offset according to claim 4, further comprising a low frequency cutoff filter connected to a preceding stage of said offset adjustment means.

12. (Currently Amended) A method of correcting offset, comprising the steps of:

adjusting offset by adding an offset adjustment amount to an input signal;

performing Viterbi decoding on the input signal after offset adjustment in said offset adjustment step for binarization; and

calculating an offset adjustment amount so as to minimize ~~that~~ a value that is obtained by dividing a standard deviation of path metric difference between a survivor path in said Viterbi decoding step and another path merged into said survivor path ~~in said Viterbi decoding step~~ by an average of said path metric difference. ~~is minimized.~~

13. (Currently Amended) The method of correcting offset according to claim 12, wherein

said calculating step includes the step of calculating an offset adjustment amount by subtracting, from a current offset adjustment amount, a calculated value obtained by multiplying ~~by~~ a prescribed coefficient with an instantaneous differential value of ~~a~~ the value obtained by dividing the standard deviation of path metric difference between said survivor path and said another path by the average of said path metric difference.

14. (Original) The method of correcting offset according to claim 12, wherein

a recording code of an original bit column of said input signal has a minimum inversion interval of at least 2, a ratio of impulse response of an isolated mark assumed in said Viterbi decoding step is set to (1:2:1), and an expected value in said Viterbi decoding step is set to $-\alpha$, -0.5α, $+0.5\alpha$, $+\alpha$ assuming α as a prescribed constant, and

when current input data, input data preceding by 1 sample, and input data preceding by 2 samples are denoted by y_i, y_{i-1}, y_{i-2} respectively, the path metric difference between said survivor path and said another path is calculated by $\pm\alpha(y_{i-2} + 2y_{i-1} + y_i)$.

15. (Original) The method of correcting offset according to claim 13, wherein

a recording code of an original bit column of said input signal has a minimum inversion interval of at least 2, a ratio of impulse response of an isolated mark assumed in said Viterbi decoding step is set to (1:2:1), and an expected value in said Viterbi decoding step is set to $-\alpha$, -0.5α, $+0.5\alpha$, $+\alpha$ assuming α as a prescribed constant, and

when current input data, input data preceding by 1 sample, and input data preceding by 2 samples are denoted by y_i, y_{i-1}, y_{i-2} respectively, the path metric difference between said survivor path and said another path is calculated by $\pm\alpha(y_{i-2} + 2y_{i-1} + y_i)$.

16. (Original) The method of correcting offset according to claim 12, wherein

said calculating step includes the step of calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

17. (Original) The method of correcting offset according to claim 13, wherein

said calculating step includes the step of calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

18. (Original) The method of correcting offset according to claim 14, wherein

said calculating step includes the step of calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

19. (Original) The method of correcting offset according to claim 15, wherein

said calculating step includes the step of calculating said offset adjustment amount so as to satisfy $x_{i+1} = x_i - k(8x_i + a + 3b + 3c + d)$, where a current adjustment amount, an adjustment amount after adjustment, a latest input signal corresponding to Viterbi decoding expected value $-\alpha$, a latest input signal corresponding to -0.5α, a latest input signal corresponding to $+0.5\alpha$, a latest input signal corresponding to $+\alpha$, and a prescribed constant are denoted by x_i, x_{i+1}, a, b, c, d, and k respectively.

20. (Original) The method of correcting offset according to claim 12, wherein

said calculating step includes the step of calculating said offset adjustment amount so as to satisfy $x = -(A + 3B + 3C + D)/8$, where an adjustment amount, an input signal corresponding to Viterbi decoding expected value $-\alpha$ after passing through a high frequency cutoff filter, an input signal corresponding to -0.5α after passing through a high frequency cutoff filter, an input signal corresponding to $+0.5\alpha$ after passing through a high frequency cutoff filter, and an input signal corresponding to $+\alpha$ after passing through a high frequency cutoff filter are denoted by x, A, B, C, and D respectively.